Course Descriptions 295

Accounting

College of Business

ACTG 244. Accounting for Non-Business Majors. 3 credits. Offered fall and spring.
For non-business majors only. Introduces basic business and accounting topics such as revenue, investments, expenditures, liabilities, credit, cash management, and taxation. Heavy emphasis is placed on the measurement of operating performance, and interpretation and use of accounting data for organizational decision-making. Not open to College of Business majors.

ACTG 302. Introduction to the Profession: Role of Accountants. 1 credit. Offered fall.
This course relies heavily on discussions with practicing accountants in public accounting, industry and government. Topics include career preparation and the role of accountants in business and capital markets. Written assignments are used to enhance communication skills. Prerequisite: Completion of both COB 241 and COB 242 with a "B" or better. Prerequisite or corequisite: COB 300.

ACTG 303. Basic Spreadsheet Skills for Accountants. 1 credit. Offered fall and spring.
This course provides students with hands-on learning and practice with basic Excel skills necessary in the workplace. Topics include creating and printing professional documents, navigating through workbooks, creating and editing formulas, using basic logical and statistical functions, and creating charts. Prerequisite: Completion of both COB 241 and COB 242 with a "B" or better. Prerequisite or corequisite: COB 300.

ACTG 304. Advanced Spreadsheet Skills for Accountants. 1 credit. Offered fall and spring.
This course provides students with hands-on learning and practice with advanced Excel skills. This course focuses on preparing students to become Microsoft Certified Application Specialists in Excel. Topics include customizing charts, using advanced financial, logical, and statistical functions, pivot tables and pivot charts, evaluation of formulas, and collaboration of workbooks. Prerequisite: Completion of ACTG 303 with a grade of "C-" or better.

ACTG 313. Accounting Information Systems. 3 credits. Offered fall and spring.
Covers the use of accounting systems for the collection, organization, analysis and reporting of accounting data. Topics include: internal controls, documentation of accounting systems, transaction processing cycles, auditing information technology, e-commerce, computer and information systems security, and integration of business functions in the accounting process. Prerequisites or corequisites: ACTG 303. Prerequisite: ACTG 343 with a grade of "C-" or better.

ACTG 343. Corporate Financial Reporting I. 3 credits. Offered fall and spring.
Provides a theoretical framework to explain and critically evaluate financial reporting by businesses. In addition to studying the authoritative standards for preparing financial statements, students develop the ability to read, use, analyze and interpret financial statements. Students gain an understanding that managers can shape the financial information communicated to investors and creditors. Prerequisites: Completion of both COB 241 and COB 242 with grades of "B" or better. Prerequisite or corequisite: COB 300.

ACTG 344. Corporate Financial Reporting II. 3 credits. Offered fall and spring.
Continues the development of a theoretical framework to read, use, analyze, interpret, explain and critically evaluate financial reporting by businesses. Selected topics include financial instruments, leases, pensions, deferred taxes, stockholders' equity and other corporate reporting issues. Prerequisite: ACTG 343 with a grade of "C-" or better.

ACTG 377. Federal Income Tax Accounting. 3 credits. Offered fall and spring.
Designed to introduce students to the federal income tax system, including individual and business entity taxation. Topics include income, exclusions, deductions and property transactions. Also facilitates development of research skills. Prerequisite or corequisite: COB 300. Prerequisite: Completion of both COB 241 and COB 242 with grades of "B" or better.

ACTG 410. Auditing. 3 credits. Offered fall and spring.
A study of techniques available for gathering, summarizing, analyzing and interpreting the data presented in financial statements and procedures used in verifying the fairness of the information. Also emphasizes ethical and legal aspects and considerations. Prerequisites: ACTG 313, ACTG 303 and ACTG 344 with grades of "C-" or better.

Africana Studies

Cross Disciplinary Studies

GAFST 200. Introduction to Africana Studies. 3 credits. Offered fall and spring.
An introductory survey of basic theoretical concepts to analyze the Black experience, with special focus on the general historical process common to Africa and the African Diaspora.

AFST 489. Africana Studies Senior Research Experience. 1 credit. Offered fall and spring.
In this research-oriented experience, students design and complete research projects relevant to their interests in Africana Studies, as well as connect their projects to previous course work and experiences within the Africana Studies minor. Prerequisites: GAFST 200, senior standing and permission of instructor.
AIRS
College of Education
AIRS 001. Leadership Laboratory. 0 credits. Offered fall and spring.
This course is a mandatory laboratory in leadership and followership development for AFROTC cadets. As a complement to the air science classes, this laboratory focuses on applying leadership principles and understanding leaders' responsibilities while emphasizing the benefits of practical experience. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Prerequisite: Permission of the instructor. Corequisite: Any Air Force ROTC class.
AIRS 10. The Foundations of the United States Air Force. 1 credit. Offered fall and spring.
This course introduces the United States Air Force and Air Force Reserve Officers Training Corps. Topics include mission and organization of the Air Force, officerhood and professionalism, military customs and courtesies, Air Force officer opportunities and communication skills. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Students interested in joining Air Force ROTC should also register for AIRS 001, Leadership Laboratory. Prerequisite: Permission of the instructor.
AIRS 110. The Foundations of the United States Air Force. 1 credit. Offered fall and spring.
This course introduces the United States Air Force and Air Force Reserve Officers Training Corps. Topics include mission and organization of the Air Force, officerhood and professionalism, military customs and courtesies, Air Force officer opportunities and communication skills. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Students interested in joining Air Force ROTC should also register for AIRS 001, Leadership Laboratory. Prerequisite: Permission of the instructor.
AIRS 120. The Foundations of the United States Air Force. 1 credit. Offered fall and spring.
This course introduces the United States Air Force and Air Force Reserve Officers Training Corps. Topics include mission and organization of the Air Force, officerhood and professionalism, military customs and courtesies, Air Force officer opportunities and communication skills. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Students interested in joining Air Force ROTC should also register for AIRS 001, Leadership Laboratory. Prerequisite: Permission of the instructor.
AIRS 210. The Evolution of Air and Space Power. 1 credit. Offered fall and spring.
This course examines general aspects of air and space power through a historical perspective, from the first balloons and dirigibles to the space age global positioning systems of the Persian Gulf War. Topics include principles of war, tenets of air and space power, historical Air Force leaders, and employment of air and space power. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Students interested in joining Air Force ROTC should also register for AIRS 001, Leadership Laboratory. Prerequisite: Permission of the instructor.
AIRS 220. The Evolution of Air and Space Power. 1 credit. Offered fall and spring.
This course examines general aspects of air and space power through a historical perspective, from the first balloons and dirigibles to the space age global positioning systems of the Persian Gulf War. Topics include principles of war, tenets of air and space power, historical Air Force leaders, and employment of air and space power. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Students interested in joining Air Force ROTC should also register for AIRS 001, Leadership Laboratory. Prerequisite: Permission of the instructor.
AIRS 310. Concepts of Air Force Leadership and Management. 3 credits. Offered fall and spring.
This course studies leadership, management fundamentals and professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of Air Force junior officers. The class examines Air Force leadership and management situations, using case studies as a means of demonstrating and applying the concepts under consideration. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Prerequisite: Permission of the instructor.
AIRS 320. Concepts of Air Force Leadership and Management. 3 credits. Offered fall and spring.
This course studies leadership, management fundamentals and professional knowledge, Air Force personnel and evaluation systems, leadership ethics, and communication skills required of Air Force junior officers. The class examines Air Force leadership and management situations, using case studies as a means of demonstrating and applying the concepts under consideration. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Prerequisite: Permission of the instructor.
AIRS 410. National Security Affairs/Preparation for Active Duty. 3 credits. Offered fall and spring.
This course examines the national security process, regional studies, advanced leadership ethics and Air Force doctrine. Topics include the military as a profession, officerhood, military justice, civilian control of the military, preparation for active duty and current issues affecting the military profession. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Prerequisite: Permission of the instructor.
AIRS 420. National Security Affairs/Preparation for Active Duty. 3 credits. Offered fall and spring.
This course examines the national security process, regional studies, advanced leadership ethics and Air Force doctrine. Topics include the military as a profession, officerhood, military justice, civilian control of the military, preparation for active duty and current issues affecting the military profession. JMU students will take AFROTC classes at the University of Virginia for JMU credit. Prerequisite: Permission of the instructor.
American Studies
Cross Disciplinary Studies
GAMST 200. Introduction to American Studies. 3 credits. Offered fall and spring.
This interdisciplinary course will highlight the student's role in interrogating the cultural and political function of representations of America in literature, history, philosophy, religion, popular culture, music and art. Students will gain an understanding of why definitions of American identity matter and learn about the contemporary debates that inform the discipline of American Studies today. Questions about the changing role of national studies in the face of globalization are central.
AMST 490. Special Studies in American Studies. 3 credits. Offered fall and spring.
Independent study of a topic appropriate to the interdisciplinary method of American studies.
Anthropology
Department of Sociology and Anthropology
KEY
A=Archaeology B=Biological Anthropology C=Cultural Anthropology
F=Field Experience R=Required for All Anthropology Majors W=Writing Intensive
GANTH 195. Cultural Anthropology. 3 credits (C,R). Offered fall and spring.
An introduction to the nature of culture and its relationship to language, economics, politics, kinship and other institutions in diverse cultures. The course also provides an overview of the theories, methods and ethical responsibilities involved in the study of cultural systems and ethnographic writing.
GANTH 196. Biological Anthropology. 3 credits (B,R). Offered fall and spring.
An introduction to the origins, evolution and genetic variability of humans and their relationship to nonhuman primates. Examination of the fossil record, the relationship between biology and culture and human genetics are included. Theories and methods used in the study of biological anthropology are also introduced.
ANTH 197. Archaeology. 3 credits (A,R). Offered fall and spring.
An introduction to archaeology through a survey of the major developments in human cultural evolution focusing on the transition from foraging to agricultural and state-level systems. An examination of the origins and nature of Old and New World civilizations and an overview of archaeological methods and theories are also included.
ANTH 201. The Discipline of Anthropology. 3 credits. Offered as needed.
This required course introduces students to the subdisciplines of cultural, biological, linguistic and archaeological anthropology and the logic of their integration within the larger discipline of anthropology. Students will be introduced to current research questions within anthropology and how they are addressed from the perspective of the various subdisciplines. Prerequisites: Major status or permission of instructor. It is recommended that students have had at least one of the introductory-level ANTH courses (GANTH 195, GANTH 196 or ANTH 197).
GANTH 205. Buried Cities, Lost Tribes: The Rise and Fall of Early Human Societies. 3 credits. Offered once a year.
This course takes an archaeological and comparative perspective on the origins of human institutions, including art, architecture, religion, centralized political formations and urban life. The development and collapse of early societies in multiple world regions, including Mesopotamia, Egypt, the Indus Valley, Mesoamerica and the Andes will be explored.
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ANTH 233. Celts, Vikings and Tribal Europe: Art and Culture from 500 to 1100 AD. 3 credits. (C).

This introductory course examines the peoples and cultures of the core Eastern European countries—China, Japan and Korea. The course is organized around anthropological perspectives on topics such as nationalism, consumption, gender, ethnicity and development but also emphasizes the cultural, social and historical characteristics of various groups in these nations in addition to important cultural flows within the region.

ANTH 300. Anthropology of Diet and Nutrition. 3 credits (B,C). Offered every three semesters.

This is an introductory course emphasizing cultural diversity of sub-Saharan African societies. Basic anthropological concepts are used in analyzing African economics, political systems, marriage patterns and family organization, religious beliefs, and the impacts of colonialism and post-colonial development practices.

ANTH 325. Peoples and Cultures of East Asia. 3 credits (C).

This introductory course examines the peoples and cultures of the core East Asian countries—China, Japan and Korea. The course is organized around anthropological perspectives on topics such as nationalism, consumption, gender, ethnicity and development but also emphasizes the cultural, social and historical characteristics of various groups in these nations in addition to important cultural flows within the region.

ANTH 328. Peoples and Cultures of Sub-Saharan Africa. 3 credits (C).

This course examines the development of Southwestern societies from early hunter-gatherers to the Native American communities of today. Major issues of anthropological interest, such as the adoption of agriculture, the development of village life, migration and abandonment, the spread of religious “cults,” the extent of Mesoamerican influence, and the effects of the Spanish conquest are explored.

ANTH 326. Peoples and Cultures of Latin America and the Caribbean. 3 credits (C). Offered every three semesters.

This course examines the development of Latin American and the Caribbean through such themes as colonialism, nationalism, ethnicity, development, aesthetic traditions, gender, religion, and urban and rural resistance movements.

ANTH 332. Ancient North American Civilizations. 3 credits (A). Offered every three semesters.

This course examines the development of Native American societies prior to historic contact. Emphasizes prehistoric developments in the eastern United States.

ANTH/HIST 331. Historical Archaeology. 3 credits (A). Offered spring.

This course introduces students to the purposes, subject matter, methodology and historical background of the discipline of historical archaeology. Building on research issues and methodologies of anthropological archaeology and history, the multidisciplinary aspects of this field are introduced through field trips, projects, guest lectures, readings and classroom presentations.

ANTH 334. Prehistoric and Pioneer Virginia. 3 credits (A). Offered fall.

This course examines the development and diversity of Indian societies in Virginia, the initial European settlement and westward expansion. Economic and social problems of initial settlement and the interaction between European and Indian cultures is emphasized.

ANTH 336. Medical Anthropology. 3 credits (B,C). Offered every three semesters.

This course examines the development of medical anthropology as a discipline and its role in understanding the cultural influences on health and illness. Topics include medical decision-making, the biological, cultural, psychological and social aspects of health and illness, and the role of the individual in the medical system.

ANTH 337. Culture and Ecology. 3 credits (C).

This course examines the relationship between culture and environment, focusing on the impact of cultural practices on the natural environment and the role of culture in shaping human response to ecological challenges.

ANTH 338. Birth, Death, Sex: Exploring Demography. 3 credits (B,C). Offered every three semesters.

This course explores the demographic and cultural factors that influence fertility and mortality, focusing on the role of culture in shaping population trends. Topics include marriage, family structure, childbearing, and mortality patterns across cultures.

ANTH 340. The Invention of Race. 3 credits (C). Offered every three semesters.

This course examines the historical and cultural construction of race in Western thought. Topics include the origins of racial thinking, the slave trade, race and religion, race and science, and the role of race in colonialism and nationalism.

ANTH 345. Magic, Witchcraft and Religion. 3 credits (C). Offered fall.

This course explores the anthropological study of religion in society. The influence of religion on the development of social, legal, governmental and economic aspects of culture is emphasized.

ANTH 350. Culture and Ecology. 3 credits (C). Offered fall.

This course examines the relationship between culture and environment, focusing on the impact of cultural practices on the natural environment and the role of culture in shaping human response to ecological challenges.

ANTH 355. Culture and Ecology. 3 credits (C). Offered spring.

This course examines the relationship between culture and environment, focusing on the impact of cultural practices on the natural environment and the role of culture in shaping human response to ecological challenges.

ANTH 358. Evolution of the Human Brain. 3 credits. Offered every two years.

This course explores the evolution of the brain, focusing on the human species. The fossil evidence and current controversies and theories about human brain evolution will be covered, including the possible role of language, tool use, sociability and dietary shifts. Sex differences in brain and behavior, the evolution of consciousness, human ethics, and morals will also be discussed.
reviewed and employed in the analysis of human behavior from bipedalism to morality. Data from the fossil and archeological records, genetics, non-human primate studies, and ethnographic fieldwork will be used. 

ANTH 435. Ethnographic Genres and Methods. 4 credits (C,F). Once a year. Explores ethnographic methods and conventions of ethnographic writing through close reading, analysis and production of ethnographic texts. Students develop critical skills in assessing ethnographic practice by examining how ethnographies are shaped by authors’ fieldwork experiences, intellectual traditions and theoretical perspectives. Students engage in fieldwork and craft their own ethnographic accounts. Prerequisite: ANTH 375.

ANTH/HIST 436. Afro-Latin America. 3 credits. Latin America and the Caribbean were the first and largest parts of the Western Hemisphere to be populated by Africans. Afro-Latin America examines cultural formations Africans brought to these regions. Beginning with an overview of the slave trade, it examines the histories of Africans and African-descendent people throughout Latin America, as well as contemporary Afro-Latin American culture(s). Prerequisites: One course in either Latin American or Africana studies (any discipline); upper-division status or permission of instructor.

ANTH 455. Archaeology: Methods of Analysis and Interpretation. 4 credits (A,F). Offered spring. A review of the nature of inquiry, recent theory and the means by which archaeologist acquire, analyze, and interpret their data. In addition to practical training in methods of analysis used in contemporary practice, students will gain experience in designing, conducting and reporting archaeological research. Prerequisites: GANTH 195 and ANTH 197.

ANTH 485. Anthropology Course Assistanthip. 1-6 credits, only 3 of which can apply to the major (May be A,B or C). Offered fall and spring. Students participate as course assistants in anthropology. Assistantships provide students with a sense of what it is like to teach an anthropology course by allowing them to work closely with faculty members through different phases of course preparation, presentation and evaluation. Assistantships also allow for a deeper understanding of course material by providing opportunities for student assistants to lead discussion and to help their peers review the material outside of the classroom. Prerequisites: Students must have junior/senior standing, must have earned a grade of “B” or better in the course for which s/he will serve as assistant, and may register by faculty invitation only.

ANTH 486. Internship in Anthropology. 1-6 credits (May be A,B or C). Offered fall and spring. Designed to encourage students to enhance their academic programs by employing and refining anthropological skills through internships in public or private agencies. Arrangements must be made with a faculty member who will oversee the internship. Prerequisite: By permission only.

ANTH 490. Special Studies in Anthropology. 1-3 credits (May be A,B or C). Offered fall and spring. Course offers students an opportunity to do independent study under staff supervision. Admission only by recommendation of the instructor and permission of the department head.

ANTH/ARTH/HIST 492. American Material Culture. 3 credits (A). Offered every two semesters. A broad introduction to the multidisciplinary “field” of material culture studies through readings, written assignments, in-class exercises and field trips. The course introduces ways of looking at and learning from objects and examines how scholars from several disciplines have used material culture in their work. Prerequisite: HIST 395. Instructor’s permission required to waive HIST 395 prerequisite for non-history majors.

ANTH 494. Field Techniques in Archaeology. 4-6 credits (A,F). Offered summer. Laboratory course directed at teaching students the basic field techniques and procedures of historic and prehistoric archaeology. Classroom lectures will present techniques and relevant aspects of method and theory.

ANTH/HIST 496. Research Thesis. 2 or 4 credits (A). Offered fall and spring. Students will gather, analyze and interpret archaeological/historical data over two semesters. Students will work on a project that demonstrates theory, research design, data gathering and analysis, culminating in a written thesis. The course meets the capstone requirement for the historical archaeology minor but is also available to students in history and anthropology. Prerequisite: Junior or senior standing.

ANTH 499 A,B,C. Honors. 6 credits. Year course (May be A,B or C). Offered fall and spring. An independent research topic initiated and completed by qualified senior majors who want to graduate with distinction.

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Art

School of Art and Art History

ART 102. Two-Dimensional Design (0, 6). 3 credits. Offered fall and spring.
Application and appreciation of the principles and elements of design, with emphasis on line, form, color and texture as applied to two-dimensional space. Formerly ART 140.

ART 104. Drawing I (0, 6). 3 credits. Offered fall and spring.
An introductory course composed of problems in landscape, perspective, figure and still-life in several media. Formerly ART 160.

ART 106. Three-Dimensional Design (0, 6). 3 credits. Offered fall and spring.
A course exploring the basic problems in three-dimensional design. Formerly ART 240.

ART 108. Drawing II (0, 6). 3 credits. Offered fall and spring.
A continuation of ART 104 involving more complex problems with emphasis on composition and expressive possibilities of a variety of media including ink, pencil, conte, charcoal and experimental materials. Prerequisite: ART 104 or permission of the instructor. Formerly ART 280.

GART 200. Art in General Culture. 3 credits. Offered fall and spring.
An exploratory course that aims to develop a non-technical, general cultural understanding of the space arts, such as architecture, painting, sculpture and industrial design. Emphasis is on the contemporary.

ART 205. Foundations Seminar. 3 credits. Offered fall and spring.
A required course for studio art majors focused on the exploration and exchange of ideas related to embarking on a studio art career. Contemporary issues and responsibilities faced by emerging artists are emphasized. Students will investigate various visual art disciplines offered by JMU, write an artist’s statement, and construct a Web site and digital portfolio. Corequisites: ART 102, ART 106 and GARTH 206. Formerly ART 280.

ART 210. Animation: 3-D Modeling (0, 9). 3 credits. Offered fall and spring.
An introduction to the techniques of 3-D modeling in computer animation. Lectures, demonstrations and projects will involve the professional gaming and animation studios’ methods of modeling digital characters and objects. Prerequisites: ART 102 and ART 104. Formerly ART 349.

ART 212. Animation: 3-D Character Animation (0, 9). 3 credits. Offered fall and spring.
An introduction to the techniques of 3-D animation. Lectures, demonstrations and projects will involve the professional gaming and animation studios’ methods of animating digital characters, objects and dynamic forces. Prerequisites: ART 102 and ART 104. Formerly ART 349.

ART 220. Introductory Ceramics: Potter's Wheel (0, 9). 3 credits. Offered fall and spring.
Explores the aesthetics, conceptualization and design of functional objects. Investigates tactility and the process of realizing form and the effective use of the wheel as a creative tool. Introduces historic and contemporary approaches, firing techniques, and glaze application. Prerequisites: ART 102, ART 104 and ART 106. Formerly ART 225.

ART 222. Introductory Ceramics: Handbuilding (0, 9). 3 credits. Offered fall and spring.
Forming techniques will be explored for both vessel and sculptural work. Addresses construction concerns such as timing, structure and mass. Conceptual issues of hand-formed and ceramic sculpture discussed. Introduces historic and contemporary approaches, firing techniques and glaze application. Prerequisites: ART 102, ART 104 and ART 106. Formerly ART 226.

ART 230. Weaving and Other Fiber Arts (0, 9). 3 credits. Offered fall and spring.
Introduction to and practice in basic weaving and other fiber arts. Emphasis will be placed on floor loom weaving and surface design on the fabric. Prerequisites: ART 102 and ART 104. Formerly ART 321.

ART 240. Metal and Jewelry (0, 9). 3 credits. Offered fall and spring.
An introduction to designing and executing jewelry and related objects through various fabrication and finishing techniques, and the exploration of metal as a medium of personal aesthetic expression. Prerequisites: ART 102 and ART 104. Formerly ART 322.

ART 242. Color Theory (0, 6). 3 credits. Offering varies.
An exploration of the nature and theories of color. Students will study the expressive and symbolic qualities of master colorists and apply this knowledge to theoretical and practical problems. Prerequisite: ART 102.

ART 280. Introductory Photography: Black and White (0, 9). 3 credits. Offered fall and spring.
A creative approach to photography with emphasis on understanding materials and techniques. (Students must provide a fully manual 35mm camera and a light meter which may be built into the camera or separate.) Prerequisites: ART 102 and ART 104. Formerly ART 255.

ART 270. Printmaking: Screenprint (0, 9). 3 credits. Offered fall and spring.
An introduction to the history and techniques of screenprinting. Lectures, demonstrations and projects will involve photomechanical and nonphotographic stencils, related digital processes and color registration. Prerequisites: ART 102 and ART 104. Formerly ART 352.

ART 272. Printmaking: Relief, Intaglio and Monotype (0, 9). 3 credits. Offered fall and spring.
An introduction to the history and techniques of relief, intaglio and monotype printing. Lectures, demonstrations and projects will involve oil based and water soluble inks, linocut, woodcut, wood engraving, collagraph, drypoint, engraving, line etching, aquatint, softground, color registration, and related photographic processes. Prerequisites: ART 102 and ART 104. Formerly ART 353.

ART 274. Printmaking: Lithography (0, 9). 3 credits. Offered fall and spring.
An introduction to the history and techniques of lithography printing. Lectures, demonstrations and projects will involve stone and plate lithography, color registration and related photographic processes. Prerequisites: ART 102 and ART 104. Formerly ART 354.

ART 280. Sculpture (0, 9). 3 credits. Offered fall and spring.
Problems in three-dimensional form using traditional and modern techniques. Processes of modeling in clay, mold making, casting, carving in wood and stone, and welded metal sculpture are explored. Prerequisite: ART 108. Formerly ART 335.

ART 304. Methods of Art Criticism. 3 credits. Offered fall and spring.
The practical analysis and interpretation of works of art through oral and written forms. Emphasis is on the practice of art criticism in public settings, such as the school classroom, art museum and college art studio. Formerly ART 317.

ART/PHIL 305. Seminar in Aesthetics. 3 credits. Offered fall and spring.
Readings and discussions in the persistent philosophical problems of the arts centering on consideration of the work of art, the artist and the audience. Prerequisite: GART 200, GARTH 205, GARTH 206 or PHIL 101. Formerly ART 380.
ART 310. Special Effects. 3 credits. Offered fall and spring.
A studio and lecture course exploring various techniques for creating computer graphics effects. Special effects may include smoke, fire, explosions, rocket/comet trails, lava, particles, hard and soft body dynamics, shattered objects, and more. Prerequisites: ART 102 and ART 104.

ART 313. Introduction to Art Therapy (1, 4). 3 credits. Offered fall and spring.
A survey dealing with the origins, historical development and major theoretical trends in the field of art therapy. Examines a variety of patient/client populations and treatment approaches. Visits to institutional settings will be included. Intended primarily for students in the arts, education and social sciences.

ART 322. Intermediate Ceramics: Surface Development (0, 9). 3 credits.
Offered spring.
Research and experimentment with ceramic materials and finishes, glaze formulation, and application for finishing ceramic artwork. Forming processes may include any combination of the potters wheel, handbuilding and mold making. Prerequisite: ART 220 or ART 222 or by permission. Formerly ART 326.

ART 323. Papercrafting (0, 9). 1-3 credits, repeatable. Offered fall and spring.
A creative approach to handmade paper as an art medium. Emphasis will be on one-of-a-kind pieces. Cast paper, mould and deckle, mould formation, collage and assemblage techniques will be explored. Prerequisites: ART 102 and ART 104.

ART 320 Intermediate Ceramics: Molds & Casting (0, 9). 3 credits. Offered fall.
Mold-making systems and processes for ceramic slip casting and pressing molding. Conceptual issues of multiples, reproductions and material transformation discussed. Also suitable for students wanting to utilize molds with other materials in their artistic production. Prerequisites: ART 220 or ART 222 or by permission.

ART 328. Stained Glass (0, 9). 1-3 credits, repeatable. Offering varies.
A comprehensive course in the design and construction of stained glass panels or windows. Traditional glazing techniques of lead came and copper foil will be explored, as well as epoxy resin bonding of dalle de verre. Glass surface decorating techniques of sandblasting, etching, platting, fusing, glue chipping and painting will be demonstrated. Prerequisites: ART 102 and ART 104.

ART 330. Intermediate Weaving and Other Fiber Arts (0, 9). 3 credits.
Offered fall and spring.
Introduction to surface design techniques such as painting and printing on fabric. Further work may be in this area (in which case no prerequisites apply) or in weaving or other fiber techniques. Prerequisite: ART 230 or permission of the instructor. Formerly ART 331.

ART 340. Intermediate Metal and Jewelry (0, 9). 1-3 credits, repeatable. Offered fall and spring.
An intermediate course offering further exploration of metal as a medium of personal aesthetic expression as well as more advanced technical experience and experimentation. Prerequisite: ART 240 or permission of the instructor. Formerly ART 333.

ART 350. Figure Drawing (0, 9). 3 credits. Offered fall and spring.
An introductory course with problems stressing the fundamental skills, approaches and concepts involved in drawing the human figure. Prerequisites: ART 104 and ART 108. Formerly ART 360.

ART 352. Painting (0, 9). 3 credits. Offered fall and spring.
Introduction to basic materials and techniques in oil or acrylic painting. This class extends previous practice with design and drawing through introductory experiences in painting. Prerequisites: ART 102 and ART 104. Formerly ART 362.

ART 354. Watercolor (0, 9). 3 credits. Offering varies.
Study of and practice in transparent and opaque watercolor techniques. Prerequisites: ART 102 and ART 104. Formerly ART 386.

ART 360. Intermediate Photography: Experimental Black and White (0, 9). 3 credits. Offered fall.
Intensive exploration of advanced black and white photography using alternative cameras, pinhole, a variety of film speeds and papers, and sequential concepts. Prerequisite: ART 260. Formerly ART 356.

ART 362. Intermediate Photography: Digital (0, 9). 3 credits. Offered fall and spring.
An intensive exploration of digital photography with an introduction to digital camera techniques, combinations of traditional and digital photographic methods, image manipulation, and modes of output. Prerequisite: ART 260. Formerly ART 357.

ART 364. Intermediate Photography: Large Format (0, 9). 3 credits.
Offered spring.
An exploration of medium format and view camera techniques, film exposure, and advanced black and white printing. Prerequisite: ART 260. Formerly ART 358.

ART 380. Intermediate Sculpture (0, 9). 3 credits. Offered fall and spring.
A study in casting techniques for sculpture using the lost wax process. Foundry operations, cold cast methods, ceramic shell and fiberglass are also explored. Prerequisite: ART 260. Formerly ART 336.

Independent activity at the intermediate level, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. Offered only with the consent of the instructor.

ART 392. Topics in Art. 3 credits. Offering varies.
Study of selected topics in art at the intermediate level. May be repeated when course content changes. See e-campus for current topics. Formerly ART 389.

ART 410. Advanced Animation (0, 9). 3 credits, repeatable. Offered fall and spring.
An advanced study of the complex aspects of natural human movement and expressions as they relate to the field of 3-D computer animation. This is a lecture/studio class in which complex character modeling and animation will be explored. The goal is to create original models that move and express themselves similarly to those found in the movie industry. Prerequisite: ART 210. Formerly ART 448.

ART 420. Advanced Ceramics: Portfolio Development (0, 9). 1-3 credits, repeatable. Offered fall and spring.
Self-directed, focused course of study with supervision of the instructor. This course is the culmination of ceramic study, resulting in a body of work suitable for exhibition and that is representative of the student's research and development. Prerequisites: ART 320 and ART 322 or permission. Formerly ART 425.

ART 430. Advanced Fiber Arts (0, 9). 1-3 credits, repeatable. Offered fall and spring.
A series of fiber projects selected by the student with the approval of the instructor. Prerequisite: ART 330. Formerly ART 421.

ART 440. Advanced Metal and Jewelry (0, 9). 1-3 credits, repeatable. Offered fall and spring.
A series of metal arts projects selected by the student with the approval of the instructor. Prerequisite: ART 340. Formerly ART 422.

ART 450. Advanced Figure Drawing. 1-3 credits, repeatable. Offered once a year.
An advanced drawing course stressing inventive and in-depth approaches to portraying the human figure. Prerequisite: ART 350. Formerly ART 460.

ART 452. Advanced Painting (0, 9). 1-3 credits, repeatable. Offered fall and spring.
Advanced problems in media selected by the student with the advice of the instructor. Prerequisite: ART 352. Formerly ART 462.

ART 454. Advanced Watercolor (0, 9). 1-3 credits, repeatable. Offering varies.
Advanced problems in the use of watercolor and related water-based media. Prerequisite: ART 354. Formerly ART 466.

ART 460. Advanced Photography: Alternative Processes (0, 9). 1-3 credits, repeatable. Offered spring.
Advanced study in photography focusing on alternative processes and experimental approaches including non-silver 19th century techniques, Polaroid, and liquid emulsion, among others. Prerequisite: ART 360, ART 362 or ART 364. Formerly ART 455.

ART 462. Advanced Photography: Color (0, 9). 1-3 credits, repeatable. Offered fall.
Advanced study in color photography. Prerequisite: ART 360, ART 362 or ART 364. Formerly ART 457.

ART 464. Photography: Portfolio Development (0, 9). 1-3 credits, repeatable. Offered fall and spring.
An intensive exploration in photography focusing on a theme or process that results in a cohesive body of work from a self-directed project and a written artist's statement. Prerequisite: ART 360, ART 362 or ART 364. Formerly ART 458.

ART 470. Advanced Printmaking (0, 9). 1-3 credits, repeatable. Offered fall and spring.
Advanced projects in printmaking to be determined by the student and instructor. Prerequisite: ART 270, ART 272 or ART 274 as appropriate. Formerly ART 454.
ART 480. Advanced Sculpture (0, 9). 1-3 credits, repeatable. Offered fall and spring. Advanced study in sculpture focusing on projects chosen by the student in consultation with the instructor from an array of materials and processes used in contemporary sculpture. Prerequisite: ART 380. Formerly ART 435.

ART 490. Independent Studies in Art. 1-3 credits, repeatable. Offered fall and spring. Independent activity, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. Offered only with consent of the instructor.

ART 491. Studio Assistant. 1-3 credits, repeatable. Offered fall and spring. An on-campus program monitored on an individual basis designed to provide practical studio experience in the visual arts. Students will learn safe studio practices and management skills, including material use, inventory control, and the proper operation of equipment found within various individual classroom studios. Prerequisites: Permission of the instructor.

ART 492. Topics in Art. 3 credits. Offering varies. Study of selected topics in art, art history, graphic design or interior design at the advanced level. May be repeated when course content changes. See e-campus for current topics.

ART 494. The Open Studio: An Interdisciplinary Approach to Creative Arts. 3 credits. Offering varies. Introduction to the interdisciplinary studio through discussion of the history of interdisciplinary art and exposure to contemporary examples from dance, theatre, music, creative writing, visual art, film and video. Emphasis on production of original work that evidences the use of another media or collaborative work by artists from different disciplines. Prerequisites: Permission of the instructor(s) and advanced skill level in one or more of the creative arts. Formerly ART 450.

ART 496. Internship in Art. 1-8 credits. Offered fall and spring. An off-campus program prepared and monitored on an individual basis. Internships are designed to provide practical experience in the arts. Prerequisites: Permission of the instructor and ARTH 394 if in museums and galleries.

ART 499. Honors. 6 credits total for three semesters (1, 3, 2). Offered fall and spring.

Art Education

School of Art and Art History

ARED 300. Art Activities in the Elementary School. (1, 4). 3 credits. Offered fall and spring. A study of the aims and philosophy of art education in elementary school with an emphasis on child growth and development through art. Experience with art techniques and materials suitable from nursery school through grade eight with emphasis on appropriate motivational and teaching methods. Includes intensive field experiences for elementary grade levels. Formerly ART 310.

ARED 302. Secondary Art Education Methods. 3 credits. Offered fall and spring. The study of art education methods, philosophy and contemporary practices as related to the middle and senior high school in public education. Includes class presentations, observation and practicum in the secondary grades. Prerequisites: PSYC 270 and EDUC 360. Formerly ART 311.

ARED 390. Independent Studies in Art Education. 1-3 credits. Offering varies. Independent activity at the intermediate level, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. Offered only with the consent of the instructor.

ARED 392. Topics in Art Education. 3 credits. Offering varies. Study of selected topics in art education at the intermediate level. May be repeated when course content changes. See e-campus for current topics. Formerly ART 389.

ARED 400. Visual Arts Across the Curriculum (1, 4). 3 credits. Offered fall and spring. Explores ways in which the art teacher can promote relationships between art and other subjects within the public school curriculum. Emphasis will be placed on how art experiences can be used to teach skills and concepts associated with other subjects. Includes a range of intensive field experiences at the middle grade level. Formerly ART 318.

ARED 490. Independent Studies in Art Education. 1-3 credits, repeatable. Offered fall and spring. Independent activity, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. Offered only with consent of the instructor.

ARED 491. Studio Assistant. 1-3 credits, repeatable. Offered fall and spring. An on-campus program monitored on an individual basis designed to provide practical studio experience in the visual arts. Students will learn safe studio practices and management skills, including material use, inventory control, and the proper operation of equipment found within various individual classroom studios. Prerequisites: Permission of the instructor.

ARED 496. Internship in Art Education. 1-8 credits. Offered fall and spring. An off-campus program prepared and monitored on an individual basis. Internships are designed to provide practical experience in the arts. Prerequisites: Permission of the instructor and ARTH 494 if in museums and galleries.

Art History

School of Art and Art History

GARTH 205. Survey of World Art I: Prehistoric to Renaissance. 3 credits. Offered fall and spring. An introduction to the art and architecture of the world from cave painting through European pre-Renaissance art. Includes ancient through medieval art in Europe and the Near East, as well as Asian and African arts.

GARTH 206. Survey of World Art II: Renaissance to Modern. 3 credits. Offered fall and spring. An introduction to art and architecture of the world from the Renaissance through Modern ages. Includes European Renaissance, Baroque, Enlightenment, 19th and 20th centuries, as well as Asian and African arts.

ARTH 210. African Art and Culture in the Humanities. 3 credits. Offered fall and spring. An interdisciplinary introduction to African art and culture with topics focusing on life ways, music, religion, philosophy, art, literature and cinema. This course provides a strong background for upper-division course work in the arts of African and the African Diaspora, as well as for students pursuing degrees in history and anthropology. May be counted as GUM 252.

ARTH 300. Art History Seminar. 3 credits. Offered fall and spring. Exploration of various methodological approaches in the history of art, including connoisseurship, iconography, formalism, psychological studies and interpretations of art and society. Students will examine contrasting interpretations of major works of art. Seminar format. Fulfills the College of Visual and Performing Arts writing-intensive requirement for the major. Prerequisite: GARTH 205 or GARTH 206 or permission of the instructor.

ARTH 303. History of Design. 3 credits. Offered fall and spring. This course is an investigation into the domains of graphic and industrial design. The material will explore these disciplines through reading, lecture and an acquired visual literacy of the contextual, ideological and philosophical agendas.

ARTH 304. History of Photography. 3 credits. Offered fall and spring. A survey of photography as an art form from its discovery to the present day. Emphasis is on 20th-century developments and recent contemporary trends.

ARTH 305. History of Decorative Arts. 3 credits. Offered fall and spring. A history of the decorative arts in Europe and America from c. 1200 to c. 1390. This course provides a stylistic and contextual analysis, concentrating on domestic furnishings, including textiles, furniture, metals, ceramics and glass. Prerequisite: GARTH 205 or GARTH 206.

ARTH 310. African Art: The Sahara and Northern Sahel. 3 credits. Offered fall and spring. An introduction to the arts and cultures of northern and northwestern Africa. The diverse, rich heritage of Africa's arts will be explored through the major style areas of Saharan and northern sub-Saharan Africa including prehistoric rock arts, Egypt, northern Africa, Christian northeastern Africa and Islamic North Africa.

ARTH 312. African Art: Sub-Saharan. 3 credits. Offered fall and spring. A survey of the arts and cultures of sub-Saharan Africa, focusing on the major style areas of the continent. Coverage will include: the historic sites of Nigeria, the Guinea Coast, and central, eastern, and southern Africa. Prerequisite: GARTH 205, GARTH 206 or permission of instructor.
The content of the document is as follows:

**ARTH 313. Masterpieces of Italian Renaissance Art.** 3 credits. (Semester in Florence only) Offered fall and spring. A survey of Italian Renaissance painting and sculpture (1280-1550), including the works of Giotto, Donatello, Masaccio, Fra Angelico, Botticelli, Leonardo and Michelangelo. Weekly visits to the Uffizi, San Marco, the Accademia and other Florentine museums.

**ARTH 314. Masterpieces of Spanish Art.** 3 credits. (Semester in Salamanca only) Offered fall and spring. A survey of art in Spain from prehistoric cave painting through 20th-century art. Emphasis is given to 17th-18th century Baroque and modern artists including El Greco, Velasquez, Goya, Gaudi and Picasso. Visits to Altamira, the Alhambra, the Prado, Toledo, Santillana del Mar and other sites.

**ARTH 315. Masterpieces of British Architecture.** 3 credits. (Semester in London only) Offered fall and spring. This history and theory of British architecture from prehistoric to modern times. Weekly visits to the British Museum, Hampton Court, Avebury, Bath, Chiswick, the Victoria Albert Museum and other monuments.

**ARTH 316. Masterpieces of British Art.** 3 credits. (Semester in London only) Offered fall and spring. Survey of painting and sculpture in Britain (1530-1860) concentrating on 18th/19th-century painting. British art is viewed in the context of European civilization. Weekly visits to London museums including the Portrait Gallery. Sir John Soane's House, the Wallace Collection and the Tate Gallery.

**ARTH 317. Masterpieces of French Art.** 3 credits. (Semester in Paris only) Offered fall and spring. A survey of French art from the Middle Ages to the modern day. Weekly visits to the major museums of Paris including the Louvre, the Musee D'Orsay, Cluny and Centre Pompidou.

**ARTH 320. Travel Study in Art History.** 3 credits. Offered fall and spring. Art history credit is available to students participating in formal travel study programs with an emphasis on art history. Students maintain a journal with an emphasis on their art history experiences and write a research paper. Prerequisites: Permission of the program leader and art history coordinator.

**ARTH 322. Ancient Art.** 3 credits. Offered fall and spring. A comparative study of major examples of art and architecture from the ancient world. Certain selected topics in pottery, painting and numismatic arts will be studied in depth. Prerequisite: GARTH 205 or permission of the instructor.

**ARTH 340. Early Medieval Art.** 3 credits. Offered fall and spring. Survey of Early Christian, Hibero-Saxon and Byzantine art 300-1200. Examines painting, mosaics, manuscripts illumination and the development of church design in Italy and the Byzantine World. Considers cross-fertilization of Pagan, Christian, Islamic and Barbarian arts in Western Europe in the Early Middle Ages. Prerequisite: GARTH 205 or permission of the instructor.

**ARTH 346. Italian Renaissance Art.** 3 credits. Offered fall and spring. A study of the development of Italian Renaissance art and architecture 1300-1550, including the revival of classical art, the development of Humanism, the invention of perspective and the formation of the High Renaissance style. Prerequisite: GARTH 206 or permission of the instructor.

**ARTH 360. Nineteenth Century Art.** 3 credits. Offered fall and spring. A study of European art (1750-1890) concentrating on Neoclassicism, Romanticism, Realism, Impressionism and Post-Impressionism in France. Prerequisites: GARTH 206 or permission of the instructor.

**NDE 370. History of Interior Design.** 3 credits. Offered fall and spring. Survey of the evolution of design in interiors from ancient to modern times with emphasis on period and furniture styles and architectural backgrounds.

**ARTH 372. Modern Art from 1900-1945.** 3 credits. Offered fall and spring. A survey of European and American painting and sculpture from 1890 to the present day. Cubism and its off-shoots, Surrealism, American Abstract Expressionism, Pop art, Contemporary Conceptual art and Realism are among the movements studied. Prerequisite: GARTH 206 or permission of the instructor.

**ARTH 376. Modern Architecture.** 3 credits. Offered fall and spring. A study of American and European architecture from 1750 to the present day. Twentieth-century architects, such as Frank Lloyd Wright, Le Corbusier and Mies van der Rohe are emphasized. Prerequisites: GARTH 206 or permission of the instructor.

**ARTH 380. American Art to 1870.** 3 credits. Offered fall and spring. American painting, sculpture, architecture and decorative arts from the Colonial period through 1870. Topics will include Colonial portraiture, African American aesthetics, the definition of folk art, nationalism and landscape painting, and the question of American exceptionalism. The course will also introduce students to problems of interpretation in current scholarship. Prerequisites: GARTH 208 or permission of the instructor.

**ARTH 382. American Art from 1870.** 3 credits. Offered fall and spring. American painting, sculpture, architecture and decorative arts from 1870 to 1945. This course will address topics such as the American Renaissance, the Harlem Renaissance, Chicago School architecture, masculinity in Western American art, notions of decay in turn-of-the-century art, and American modernism. It will also introduce methodological debates in current scholarship. Prerequisites: GARTH 208 or permission of the instructor.

**ARTH 389. Topics in Art History.** 3 credits. Offered fall and spring. Study of selected topics in art, art education, art history, graphic design, interior design or industrial design at the intermediate level. May be repeated when course content changes. See e-campus for current topics.

**ARTH 390. Independent Studies in Art History.** 1-3 credits. Offered fall and spring. Independent activity at the intermediate level, such as research or studio practice, under faculty supervision. Projected studies in any area of the school's offering must be arranged with the instructors who will direct them. Offered only with the consent of the director.

**ARTH/HIST 394. Introduction to Museum Work.** 3 credits. Offered fall and spring. A study of the philosophy and practice of museum work including the areas of exhibit design, conservation registration, education and administration. Subject is taught from the perspective of the museum profession and is applicable to diverse discipline and types of collections.

**ARTH/HIST 396. Introduction to Public History.** 3 credits. Offered fall and spring. An introduction to the varied and interdisciplinary "field" of public history, such as community/local history, historic preservation, archives, historical archaeology, museum studies, business and policy history, documentary editing and publishing, and documentary films, through readings, class discussions, occasional guest speakers and occasional field trips.

**ARTH/HIST 408. The Museum: Histories and Controversies.** 3 credits. Offered every other spring as of spring 2007. This seminar centers on art museums in the United States. Topics include the historical development of museums, related cultures of display, recent debates on institutional mission and responsibility, and contemporary artists who employ the museum as medium, subject matter or site. Required field trips. Prerequisite: GARTH 206 or permission of instructor.

**ARTH 410. African Art: The Sahara and Northern Sahel.** 3 credits. Offered fall and spring. An introduction to the arts and cultures of northern and northwestern Africa. The diverse, rich heritage of Africa's arts will be explored through the major style areas of Saharan and northern sub-Saharan Africa including prehistoric rock art, Egypt, northern Africa, Christian northeastern Africa and Islamic North Africa.

**ARTH 419. Topics in African Art.** 3 credits. Offered fall and spring. Topics in African art will deal with the current thematic or methodological issues such as contemporary African arts and artists, arts of the African Diaspora, a particular media (such as architecture or the textile arts), portraiture and identity, the royal arts of Africa, African film and performance, or gender in the arts of Africa. Prerequisite: GARTH 205, GARTH 206, ARTH 210 or permission of the instructor.

**ARTH 424. Arts of Ancient Egypt.** 3 credits. Offered fall and spring. A study of the arts and culture of Ancient Egypt (c. 3000 B.C. to c. 300 B.C.). This course will focus on the art and architecture of the Old and New Kingdoms and also examine the enduring fascination with this unique artistic heritage from the excavations of Napoleon to the present. Prerequisite: GARTH 205 or GARTH 206.

**ARTH 430. Far Eastern Art.** 3 credits. Offered fall and spring. A study of Asian art from prehistoric times to 19th century colonialism. Emphasis is on the areas of major production: India, China and Japan, with less attention to such centers as Cambodia, Siam and Korea. Prerequisite: GARTH 205 or GARTH 206.

**ARTH 442. Art of Later Middle Ages.** 3 credits. Offered fall and spring. A study of Western European arts and architecture in the later Middle Ages with concentration on Romanesque and Gothic styles (1000-1400). Examines church construction and allied arts around the millennium and the development of Gothic architecture, sculpture and painting in France, Italy and England. Prerequisite: GARTH 205 or permission of the instructor.
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<td>Gothic and Gothic Revival Architecture</td>
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<td>ARTH 449</td>
<td>Topics in Renaissance Art</td>
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<td>ARTH 450</td>
<td>Baroque Art</td>
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<td>Art and Nationalism</td>
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<td>Modern Art Since 1945</td>
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<td>The New Media and Contemporary Art</td>
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<td>Internship in Art History</td>
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Astronomy

Department of Physics and Astronomy

*ASTR 120. The Solar System. 3 credits. Offered once a year.
An introductory course in astronomy, which includes the following topics: motions of celestial objects, eclipses, historical development, the nature of light, telescopes and properties and evolution of the solar system. Students may not receive credit for ASTR 120/121 and PHYS 120/121.

*ASTR 121. Stars, Galaxies and Cosmology. 3 credits. Offered once a year.
An introductory course in astronomy which includes the following topics: the Sun, stellar properties, stellar evolution, black holes, the Milky Way, galactic evolution, quasars, cosmology. Students may not receive credit for ASTR 120/121 and PHYS 120/121.

ASTR 220. General Astronomy I: The Night Sky, the Solar System and Stars. 3 credits. Offered once a year.
ASTR 220 is the first in a two-course sequence in general astronomy intended for students with a background in physics. Topics covered include: appearance and movements of the night sky; astronomical coordinate systems and timekeeping; seasons, eclipses and planetary configurations; planetary motions and gravitation; fundamental forces; electromagnetic radiation and its detection; content, structure, formation and evolution of solar system objects and models of the Sun, stellar interior models; stellar magnitudes and spectra, classifications; Hertzsprung-Russell diagram. Prerequisite: PHYS 140 or PHYS 240.

ASTR 221. General Astronomy II: Star Systems, the Interstellar Medium and Cosmology. 4 credits. Offered once a year.
ASTR 221 is the second in a two-course sequence in general astronomy intended for students interested in science. Topics covered include: stellar evolution; variability and high-energy phenomena in stars and multiple-star systems; content, structure, and dynamics of the Milky Way; external galaxies, quasars and AGNs, large-scale structure and the distance scale of the universe; the Big Bang model and alternative cosmologies, possible geometries and eventual fates of the universe. An observational astronomy laboratory component is part of this course. The lab component will cover basics of telescope set up and operation as well as astronomical coordinate systems. Prerequisite: ASTR 220.

ASTR 297. Topics in Astronomy. 1-4 credits. Offered on demand.
Topics in astronomy at the second year level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR 301. Searching for Life in the Universe. 3 credits. Offered spring.
A study of the search for life in the universe, with emphasis on teacher preparation. Topics include how life on earth can guide the search, conditions for life within our solar system, extrasolar planets that may be conducive to life, possible radio communications with other civilizations and technologies necessary for search. Significant time is spent developing student lesson plans. Prerequisites: GSCI 161, GSCI 162, GSCI 163 and GSCI 164.

ASTR 320. Astronomical Techniques. 3 credits. Offered on demand.
An overview of modern astronomical techniques with an emphasis on quantitative data collection and analysis. The design and use of various astronomical devices will be covered. Topics will include visible light telescopes and radio telescopes as well as CCD data collection in addition to other current astronomical techniques. Data reduction software will also be addressed. Prerequisites: ASTR 220 and ASTR 221.

ASTR 397. Topics in Astronomy. 1-4 credits. Offered on demand.
Topics in astronomy at the intermediate level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR/PHYS 398. Independent Study in Physics or Astronomy. 1-3 credits, repeatable to 4 credits. Offered on demand.
An individual project related to some aspect of physics or astronomy. Must be under the guidance of a faculty advisor. A student may not earn more than a total of four credits for PHYS 398 and ASTR 398.

ASTR 480. Astrophysics. 3 credits. Offered on demand.
An introduction to the problems of modern astronomy and the quantitative application of physical principles to these problems. Topics of study include stellar structure and evolution, the interstellar medium and star formation, cosmic rays, pulsars, galactic structure, extragalactic astronomy and cosmology. Prerequisites: PHYS 340 and PHYS 380.

ASTR 497. Topics in Astronomy. 1-4 credits. Offered on demand.
Topics in astronomy at the advanced level. May be repeated for credit when course content changes. Topics selected may dictate prerequisites. Students should consult instructor prior to enrolling for course. Prerequisite: Permission of the instructor.

ASTR/PHYS 498R. Undergraduate Research in Physics or Astronomy. 1-4 credits, repeatable to 6 credits. Offered on demand.
Research in a selected area of physics or astronomy as arranged with a faculty research advisor. A student may not earn more than a total of six credits for PHYS 498R and ASTR 498R. Prerequisite: Proposal for study must be approved prior to registration.

Athletic Training Education Program

Department of Health Sciences

ATEP 205. Introduction to Athletic Training (2, 2). 3 credits. Offered fall.
This course provides a broad introduction to the profession of athletic training. Lectures will focus on the domains of athletic training. Emphasis will be placed on basic emergency management as well as injury prevention including environmental issues, strength and conditioning, and selection of equipment. Laboratory will mirror lecture. Prerequisite: ATEP or HS major, coaching minor, or permission of instructor.

ATEP 206. Recognition and Management of Athletic Injuries. 3 credits. Offered spring and summer.
Building on the concepts learned in ATEP 205, the course will emphasize the recognition of common athletic injuries. Pathology, mechanisms of injury, signs and symptoms, evaluation findings, and basic management of injuries will be explored. Athletic injuries of special populations will also be addressed. Prerequisites: BIO 290 and ATEP 205 with a grade of “C” or better.

ATEP 291. Pre-Professional Practicum in Athletic Training. 2 credits. Offered spring.
This course is designed to help students better understand the duties and responsibilities of the athletic trainer. By focusing on psychomotor skills and the application of didactic knowledge, students build a foundation which prepares them for future clinical rotations. Prerequisite: Permission of the instructor.

ATEP 304A. Lower Quarter Evaluation (2, 2). 3 credits. Offered fall.
This course systematically focuses on orthopedic and neurological evaluation including functional testing of athletic injuries. The lower quarter consists of the lower extremity, pelvis and lumbar spine. Other topics include management of internal injuries and sudden death related to athletic participation. Prerequisite: ATEP 206 and admission to the clinical component of the athletic training curriculum.

ATEP 304B. Upper Quarter Evaluation (2, 2). 3 credits. Offered spring.
This course systematically focuses on orthopedic and neurological evaluation including functional testing of athletic injuries. The upper quarter consists of the upper extremity, head, neck and thorax. Other topics include management of crisis situations and facial injuries related to athletic participation. Prerequisite: ATEP 304A.

ATEP 305. Rehabilitation in Athletic Training: Lower Extremity (2, 2). 3 credits. Offered spring.
This course explains the rehabilitation process of lower extremity muscular and joint injuries related to athletic activities. Additional topics include rehabilitation facility design, budget preparation and pre-season assessment. Prerequisite: BIO 290 and admission to the clinical component of the athletic training curriculum.

ATEP 306. Therapeutic Modalities (3, 2). 4 credits. Offered fall.
This course provides a thorough overview of tissue injury, inflammatory response, healing process and neurophysiology applied to musculoskeletal injuries. Theory, application and clinical decision-making processes using therapeutic modalities during rehabilitation will be emphasized. Documentation, purchasing and maintenance are also addressed. Prerequisites: ATEP 206 and admission to the clinical component of the athletic training curriculum.

ATEP 307. Field Applications in Athletic Training. 2 credits. Offered fall.
This course is designed for athletic training students to meet the educational competencies for national accreditation in the following areas: development of risk management/emergency action plans, prevention of...
injuries associated with the physically active, utilization of diagnostic tools and an overall understanding of protective equipment. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 350. Measurements and Testing in Athletic Training. 2 credits. Offered fall.

The purpose of this course is to introduce and develop proficiency with measurement techniques frequently used in athletic training. Students will learn clinical evaluation techniques such as manual muscle testing, goniometry, volumetric measurements and girth measurements. How these measures are used in research will also be presented. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 355. Infectious Disease Control. 1 credit. Offered spring.

Discussion includes theories of origins, statistics and characteristics of the causative pathogen, incubation, illness patterns, transmission, prevention and treatment of infectious and noninfectious disease. Emphasis is placed on STDs, HIV, Hepatitis and OSHA regulations. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 356. Pharmacology for Athletic Trainers. 2 credits. Offered fall.

This course is designed for students to understand knowledge, skills and values that an entry-level certified athletic trainer must possess in pharmacological applications, including awareness of the indications, contraindications, precautions and interactions of medications, and the governing regulations relevant to physically active individuals. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 357. General Medicine in Athletic Training. 2 credits. Offered spring.

This course is designed for students to understand knowledge, skills and values that an entry-level certified athletic trainer must possess in order to recognize, treat and refer when dealing with general medical conditions and disabilities related to athletes or others involved in physical activity. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 392. Level II Practicum in Athletic Training. 3 credits. Offered fall.

This course focuses on clinical performance and application of didactic knowledge. Clinical rotations, clinical competencies, inservices, case studies and professional journals are included in course content. Sport specific activities and clinical applications involving palpation and wound care are key components of this course. August preseason orientation and clinical participation required. Prerequisite: Admission to clinical component of athletic training curriculum.

ATEP 393. Level III Practicum in Athletic Training. 2 credits. Offered spring.

This course focuses on clinical performance and application of didactic knowledge. Clinical rotations, clinical competencies, inservices, case studies and professional journals are included in course content. Sport specific activities and clinical applications involving manual muscle testing and equipment fitting are key components of this course. Prerequisite: ATEP 392.

ATEP 405. Rehabilitation in Athletic Training: Upper Extremity. 3 credits. Offered fall.

This course explains the rehabilitation process of upper-extremity muscular and joint injuries related to athletic activities. Additional topics include prevention of athletic injuries and aquatic rehabilitation. Prerequisite: ATEP 305.

ATEP 406. Organization and Administration in Athletic Training. 3 credits. Offered spring.

This course is an overview of managerial issues including legal concerns, OSHA guidelines, budgeting/purchasing and staffing. In addition, this course provides a variety of experiences culminating in the knowledge and skills needed to meet entry-level competencies set by the National Athletic Trainers’ Association. Prerequisite: Permission of the instructor.

ATEP 494. Level IV Practicum in Athletic Training. 2-3 credits. Offered fall.

This course focuses on clinical performance and application of didactic knowledge. Clinical rotations, clinical competencies, inservices, case studies, and professional journal are included in course content. Sport specific activities and clinical applications involving orthopedic testing and emergency internal abdominal/chest evaluation are key components. Prerequisite: ATEP 393.

ATEP 495. Level V Practicum in Athletic Training. 2 credits. Offered spring.

This course focuses on clinical performance and application of didactic knowledge. Clinical rotations, clinical competencies, inservices, case studies and professional journal are included in course content. Sport specific activities and clinical applications involving cranial nerve assessment and neurological evaluation are key components of this course. Prerequisite: ATEP 494.